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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,368	07/18/2003	Tatenuma Katsuyoshi	Hohjoh Case 50	3174
23474	7590	09/27/2006	EXAMINER	
FLYNN THIEL BOUTELL & TANIS, P.C. 2026 RAMBLING ROAD KALAMAZOO, MI 49008-1631			PHASGE, ARUN S	
			ART UNIT	PAPER NUMBER

1753

DATE MAILED: 09/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/623,368	KATSUYOSHI ET AL.	
	Examiner	Art Unit	
	Arun S. Phasge	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Hilbertz et al (Hilbertz) article entitled, "Third Generation Artificial Reefs".

The Hilbertz reference discloses the claimed method for the removal of atmospheric carbon dioxide comprising the process of decarbonated surface ocean water, which concentration of carbonate is reduced by removing carbonate ions such as bicarbonate ion and carbonate ion by forming insoluble carbonate precipitates and sedimentation disposal of the insoluble carbonate precipitates to ocean bottom (see page 3). The removal of carbonate ions from the ocean water would shift the naturally occurring equilibrium and would remove carbon dioxide from the air. The reference discloses the electrolysis of the ocean water without any additives, which would decrease the concentration of hydrogen ion in the

treated water by forming hydrogen gas (see page 4 column 3). The reference further discloses the collection of the hydrogen formed at the cathode is recycled as an energy carrier (see page 4, column 3).

Accordingly, the claims are rejected.

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Hilbertz et al ('034) U.S. Patent 5,543,034.

The '034 patent discloses the claimed method for the removal of atmospheric carbon dioxide comprising the process of decarbonated surface ocean water, which concentration of carbonate is reduced by removing carbonate ions such as bicarbonate ion and carbonate ion by forming insoluble carbonate precipitates and sedimentation disposal of the insoluble carbonate precipitates to ocean bottom (see col. 9, line 14 to col. 10, line 65). The removal of carbonate ions from the ocean water would shift the naturally occurring equilibrium and would remove carbon dioxide from the air and the reference teaches that the electrolytically precipitated limestone was proposed as a "sink" for carbon (see col. 2, lines 1-5). The reference discloses the electrolysis of the ocean water without any additives, which would decrease the concentration of hydrogen ion because the pH of the water would rise (see col. 7, line 42-50). Finally, it appears that claims 1-

4 could be rejected by the naturally occurring removal of carbonates from seawater by organisms, such as coral and mollusks, which use the carbonates from seawater to form structural formations and allow the seawater to further absorb additional carbon dioxide (see col. 1, lines 48-60 and col. 8, lines 22-40).

Consequently, the claims are rejected.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun S. Phasge whose telephone number is (571) 272-1345. The examiner can normally be reached on MONDAY-THURSDAY, 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Arun Phasge', with a large, stylized initial 'A'.

Arun S. Phasge
Primary Examiner
Art Unit 1753

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